

Appendix B**DESIGN POLICIES AND BUILDING CODES****A. Introduction and Statement of Policy**

Design principles to be followed in the development of the Coast Guard buildings, structures, pavements, and utilities shall be as outlined in this section. Detailed and specific requirements are provided in the SOW and related sections of this manual. This section is restricted to describing general policies only.

Policies stated herein apply to new construction and rehabilitation projects. It is not the intent of this chapter to require existing facilities to be altered or improved to meet these principles and/or criteria beyond what is required in the project scope.

B. Guiding Principles – Shore Facilities Capital Asset Management (SFCAM) Strategy

All Coast Guard facilities are developed and managed through a strategy called the Shore Facilities Capital Asset Management (SFCAM) program. It is a top-down strategic initiative that integrates planning, investing, using, and divesting decisions to better align shore facilities with missions.

- a. Mission: To provide sustainable shore infrastructure that enables Coast Guard mission readiness.
- b. Vision: "Right Facility, Right Place, Right Time, Right Cost"
- c. Guiding Principles: Ensure the Best Value Shore Capability for the Coast Guard. All decisions and actions taken to manage shore facility capital assets will strive to achieve and maintain best value through a business case analysis that balances the following factors:

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| ▪ Ease of Maintenance | ▪ Aesthetics |
| ▪ Ease of Construction | ▪ Location |
| ▪ Environmental Stewardship | ▪ Mission Essentiality |
| ▪ Energy Management | ▪ Functionality |
| ▪ Flexibility for Future Requirements | ▪ Size |
| ▪ Safety and Health | ▪ Affordability |
| ▪ Sensitivity to Community Concerns and | ▪ Ease of Disposal |
| ▪ Local Conditions | |

C. General Design Principles

- a. Functional and operational requirements shall be the primary considerations in design of all types of facilities.

- b. Designs shall provide both economical initial and life cycle cost consistent with the facility function, ease of maintenance, comfort of personnel, and satisfaction of operational requirements.
- c. Designs shall provide esthetically pleasing facilities, well-proportioned and simple lines, and careful choice of compatible colors and finishes.
- d. Designs shall incorporate a planned means for future building expansion when physical conditions allow or when called for in planning documents.
- e. Designs for utilities shall provide systems that are capable of being extended to meet future system expansion requirements. Consult with EIC to determine expansion requirements.
- f. Designs shall provide painting systems in accordance with the Coast Guard Coatings and Color Manual (COMDTINST.M10360.3).
- g. All civil, landscaping, architectural, structural, mechanical, electrical and communications designs shall comply with their relative sections in this A/E Guide.
- h. Drawing scale shall be appropriate for the item being illustrated. Each drawing shall clearly present the intended information, being neither too large nor too small.
- i. Designs shall minimize the maintenance burden on the user. Maintenance-free materials and easy to operate and maintain systems shall be used.

D. Applicable Building Codes

Unless otherwise indicated in the SOW, the codes listed in Table B.1 shall be followed for A/E designed Coast Guard shore facilities. The design shall be in conformance with the latest edition of the code in effect at the time of award of the A/E contract.

Table B.1	
Discipline	Code
All	International Building Code, 2000 Addition (where adopted) Uniform Building Code, 1997 Addition (elsewhere)
All	NFPA 101 Life Safety Code, 1994 Addition
Electrical	National Electric Code (NFPA #70), 1999 Addition
Mechanical	Uniform Mechanical Code, 1999 Addition
Plumbing	Uniform Plumbing Code, 1991 Addition

In cases of life safety conflicts, the NFPA Codes will supercede the requirements of the model building codes.

Major Exceptions:

1. Earthquake Protection. In earthquake zones #3 and higher, all fuel gas building service lines shall have earthquake shut-off valves installed before building entry.
2. Aluminum Electrical Conductors. The use of aluminum conductors in building interior power distribution wiring is prohibited.
3. Facilities and Occupancies. The requirements covered in the section entitled "Special Facility and Occupancy Requirements" identified in paragraph D of this appendix shall be in addition to and/or take precedence over any conflicting requirements imposed by the model building code adopted by the local authority having jurisdiction.

1. Local Codes and Standards.

Adherence to requirements of local codes which are more restrictive than UBC should be evaluated and followed where it is considered to be in the best interest of the Government.

2. Department of Defense Facilities.

Where a USCG facility is a tenant on a DOD site, the USCG may be required to be in conformance with DOD design standards which conflict with the National Model Building Code. The DOD standards shall govern.

3. Locations Outside the United States.

Coast Guard shore facility designs that are to be built outside the United States shall be in conformance with the International Building Code, except where the host nation uses a code with more restrictive requirements the host nation's code will then govern.

4. Exceptions to Policy.

Exceptions to the building code policies stated in this section may be granted on a case-by-case basis. Exceptions will only be granted where sufficient justification exists. Requested exceptions, with justifications, should be submitted in writing to the KO.

E. Special Facilities and Occupancy Requirements

The following requirements take precedence over those imposed by the National Model Building Code and any other code in effect for the location.

- a. Bachelor Enlisted and Officer Quarters. Automatic smoke detection and alarm systems shall be installed in all bachelor enlisted and officer quarters. Automatic detection and alarm systems, and automatic extinguishing systems shall protect all facilities that include berthing areas.
- b. Family Housing. Fire protection and life safety criteria shall conform to the current edition of the Council of American Building Officials (CABO) "One- and Two-Family Dwelling Code."
- c. Aircraft Hangars. All new aircraft hangars shall be equipped with a foam-water deluge system in the main hangar area. Design system in accordance with NFPA Standard #409, Aircraft Hangar Fire Protection. Hangar lean-to areas shall be separated from the main hangar area by one-hour, fire-rated walls. Provide curbs or ramps and drains at all openings that penetrate the separating wall. Automatic sprinkler systems shall be provided in all lean-to areas. A containment system for the foam-water deluge system shall be provided to prevent the deluge from escaping the hangar.
- d. Electronic Equipment Installations. New facilities having electronic equipment installations shall be designed with fire-resistive construction as a minimum construction type. Rooms housing electronic equipment shall be separated from other occupancies by fire-rated walls or partitions. Standard wet-pipe or pre-action automatic sprinkler systems shall be provided in electronic equipment areas where combustible materials, including cards, paper, and plastics are processed or stored (excluding cards, paper, disks and tapes within machines). In areas such as electronic shops and avionics shops, automatic power shutdowns shall be installed to cut power to work benches in the event the sprinkler systems are activated.

- e. Major Electronic/Computer Installations. Facilities containing major computer or electronics equipment installations shall conform to NFPA 75 for construction and fire protection requirements.
- f. Remote Operating System (ROS). For LORAN stations utilizing solid-state transmitters equipped with self-contained clean agent suppression systems, the transmitter room, operations room, and other work spaces shall be protected by dry pipe sprinkler systems in lieu of room-flooding clean agent systems. In the event water availability is severely limited, an economic analysis shall be performed to select the building protection system. Activation of the building fire protection system shall shut down all power to the transmitter and operations room, as well as all heating, cooling, and ventilation systems. Building spaces shall be monitored using ionization and photoelectric detectors. The system shall be designed to alarm locally and remotely, as required.

F. Special Design Considerations

- a. Operational Mission Requirements. The operational mission requirements of a facility have a higher priority than any other requirements of the design. The facility must be designed to fully meet the requirements of the mission.
- b. Sizing Standards. All spaces shall be sized in accordance with the Space Component Standards Manual, COMDTINST MI1012.7.
- c. Occupational Safety and Health Act and 29CFR OSHA Regulations, Parts 1900, etc. Designs and construction methods for all new and rehabilitated facilities, including all site layouts, buildings and Government furnished equipment, shall comply with the requirements of appropriate parts of the Occupational Safety and Health Act of 1970.
- d. Access for the Physically Handicapped. Coast Guard shore facilities shall be designed and constructed to provide access to the physically handicapped in accordance with Chapter 2 entitled "BARRIER FREE ACCESS" of COMDTINST MI1000.11A and Uniform Federal Accessibility Standards. The Americans With Disabilities Act (ADA) does not apply to federal facilities.
- e. Value Engineering. Value Engineering is considered an integral part of the project design. See Chapter 14 entitled "VALUE ENGINEERING" of COMDTINST.MI1000. 11A for Coast Guard policy on Value Engineering.
- f. Physical Security . For a description of security requirements, see the Coast Guard Physical Security Program, COMDTINST M5530.1B, and the Navy Design Manual, DM-13, Physical Security.
- g. Potable Water Supply and Wastewater Treatment. Shall be in accordance with COMDTINST MI1200.2, "Water Supply and Wastewater Disposal Manual."

- h. Energy-Related Facilities. In addition to the main facility meters provided by the gas and/or electric company, additional individual metering shall be provided as follows:
- (a) Shore ties for all vessels having OPFAC numbers.
 - (b) All new buildings.
 - (c) Individual family housing units.
 - (d) NAFA facilities.
- i. Female Personnel Considerations. Designs for shore facilities shall include considerations for their use and/or occupancy by female personnel. These considerations should include:
- 1. Berthing. In the calculation of the number of berthing modules required to house the personnel authorized permanent-party berthing at a unit, one additional module shall be added to the total to ensure male/female separation. Facilities, such as designated UPH buildings or where the expected occupancy is 50 or more are exempt from this requirement.
 - 2. Toilets. In cases where the total number of expected users does not exceed 15, a single uni-sex, 2-fixture toilet, with a lockable door, may be provided. All other facilities requiring public/staff/shop/crew toilets shall provide separate toilets for female use.
 - 3. Shower and/or Locker Facilities. Where facilities require shower, locker, or wetrooms, separate facilities shall always be provided for male and female personnel.
- j. Flood-Level Elevation. All shore facilities shall be designed so that finish ground floors are above the 100 year flood elevation. Base design on current FEMA maps for the area and local historical high-water data.
- k. Asbestos. Asbestos and materials that contain asbestos shall not be used in new construction, rehabilitation or maintenance of shore facilities. For asbestos removal, exposure and disposal regulations and requirements, see the "Asbestos" section of COMDTINST M16478. 1, "Hazardous Waste Management Manual."
- l. Service Life. Coast Guard shore facilities may be divided into two construction classes which are based on expected service life. They are: (1) Permanent, and (2) Temporary.
- 1. Permanent. Permanent class construction will incorporate the quantity of materials, equipment, details, and methods of construction to produce facility that will serve a specific purpose for at least 30 years. Permanent buildings should be designed to include a high degree of internal flexibility, as well as a possibility for expansion so those new and/or revised mission requirements

can be accommodated. Permanent class buildings will account for the majority of shore facilities in the Coast Guard

2. Temporary. Temporary class construction will incorporate the quality of materials, equipment, details, and methods of construction to produce a building or facility suitable to provide minimum accommodations at low first cost to serve a specific purpose for five years or less. Temporary buildings should only be built when it appears that the mission to be supported will be of a short duration, or when it is required to house special equipment that will become obsolete within a few years.
- m. Energy Conservation. For energy conservation requirements applicable to shore facility design, see COMDTINST M11000.7, Civil Engineering Facilities Energy Manual."
 - n. Underground Fuel Storage. Underground storage of fuel is not normally permitted on Coast Guard facilities. Should the project require use of underground fuel storage, the system shall comply with the Resource Conservation Recovery Act (RCRA).
 - o. Preservation and Restoration of Historical Shore Facilities. Preservation of historical facilities shall be in accordance with Section 106 of the National Historic Preservation Act (36 CFR Part 800) and the Civil Engineering Technical Report CG-ECV-2-82, guide for restoring and preserving old and historical properties.
 - p. Pollution Control: All applicable pollution control standards promulgated by Federal, State and local agencies in implementing environmental legislation; Clean Water Act; Resource Conservation Recovery Act; Safe Drinking Water Act; Noise Control Act; Toxic Substances Control Act; Marine Protection and Sanctuaries Act; Federal Insecticide, Fungicide and Rodenticide Act; are applicable. "Applicable pollution control standards" are the same substantive, procedural, and other requirements that would apply to the private and industrial sectors. Facilities shall be designed to comply with the most stringent Federal, State or local standards.
 - q. Stormwater Management: Stormwater management shall be incorporated into all applicable designs so as to eliminate or reduce the discharge of pollutants from impervious surfaces, i.e. rooftops, and parking areas. Applicable state stormwater management guidelines shall be followed.

G. Design References and Standards

Table B.2 lists applicable design references and standards by design discipline.

Local Requirements: The majority of Coast Guard facilities are on federal property and are therefore exempt from local building codes. However, all construction shall conform to local codes and utility system installations shall conform to local utility standards unless other directed by the EIC.

Table B.2 Design References and Standards	
Civil Design	
Storm Sewer System and Surface Drainage	Per locally accepted practices
Water Systems	NAVFAC Military Handbook 1005/7A Water Supply Systems, 01 September 1999 National Fire Protection Association (NFPA). American Public Works Association (APWA).
Sanitary Sewer Systems	NAVFAC DM 5.8 Pollution Control Systems American Public Works Association (APWA).
Pavements	American Public Works Association (APWA). The Asphalt Institute Publications. Principles of Pavement Design - John Wiley & Sons, Inc., New York. Applicable local and state Department of Transportation Design Manuals
Architecture	
All facilities	Shore Facilities Project Development Manual (SFPDM) - COMDTINST. M11010. 14. Space Component Standards – COMDTINST M11012.7 Multi-Mission Station Design Guide Housing - Chapter 11 of COMDTINST M11000.11A.
Structural	
Marine Structures (Piers, Wharves, Wavebreaks, etc)	"Standard Specifications for Highway Bridges" (AASHTO) "AASHTO LRFD Bridge Design Specifications" (AASHTO) "Shore Protection Manual" - Army Corp of Engineers NAVFAC Military Handbook 1025/1 Piers & Wharfs NAVFAC Design Manual 26.4 & 26.5 Fixed and Fleet Mooring
Bridges (Vehicular, Bicycle, and Pedestrian)	Design using the more stringent of the state's department of transportation criteria or the "Standard Specifications for Highway Bridges" or "AASHTO LRFD Bridge Design Specifications" by the American Association of State Highway and Transportation Officials (AASHTO).
Antenna Towers and Antenna Supporting Structures	Design using national building code as approved and modified by the local building official or ANSI EIA/TIA 222-2E, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, whichever is more stringent.
Mechanical	
Plumbing Systems	NAVFAC DM-3.01 Plumbing Systems NAVFAC Military Handbook 1003/1(YD), Department of Defense Handbook, Plumbing, 15 February 2000
HVAC	ASHRAE Guide and Data Book ASHRAE Guide, Industrial Ventilation Manual NAVFAC Military Handbook 1003/3, Heating, Ventilating, Air Conditioning and Dehumidifying Systems, 15 November 1995 NAVFAC Military HB 1003/17C, Industrial Ventilation Systems, 29 Feb 1996

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Energy	NAVFAC Military Handbook 1003/13A, Solar Heating of Building and Domestic Hot Water, 14 June 1985 NAVFAC Military Handbook 1003/19, Design Procedures for Passive Solar Buildings, 03 May 1998
Fire Protection	
Fire Protection	NAVFAC Military Handbook 1008C, Fire Protection for Facilities Engineering, Design and Construction, 10 June 1997
Electrical	
	NAVFAC Military Handbook 1004/1, Electrical Engineering Preliminary Design Considerations, 30 May 1988 NAVFAC Military Handbook 1004/2A, Power Distribution Systems, 15 January 1992
Communications	
Voice/Data Wiring	Electronics & Telecommunications installation: COMDTINST M10550.25 ANSI/EIA/TIA-568A Commercial Building Telecommunications Wiring Standard ANSI/EIA/TIA-569A Commercial Building Standard for Telecommunications Pathways and Spaces ANSI/EIA/TIA-606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings ANSI/EIA/TIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications